

## **Science technology and innovation policy that is responsive to innovation performers**

to be presented at the Atlanta Conference on Science and Technology, September 2013  
September 26<sup>th</sup> to 28<sup>th</sup> (<http://www.atlantaconference.org/>).

Gillian Marcelle, Wits Business School, Joburg South Africa, [gillian.marcelle@wits.ac.za](mailto:gillian.marcelle@wits.ac.za)

---

This paper will present an argument and evidence regarding the extent to which science, technology and innovation policies, particularly in developing countries, often ignore the perspectives of innovation performers. It will argue that much policy is either silent on or deeply flawed in terms of an understanding of the private sector perspectives and dynamics of innovation. Inadequacies in treatment of the nature of innovation dynamics as understood by innovation performers, particularly those within private sector firms negatively affects the efficacy of innovation policy.

This paper is organised in three sections, which are described in the rest of the introduction. Section two, which follows the introduction presents a synthesis of academic and practitioner conceptual material on the role of the private sector in innovation and the process of innovation management at firm level. The paper ends with a set of conclusions and recommendations based on the analysis of the material contained therein.

The review of the academic treatment of strategic management of innovation will draw heavily on a the critical review by UK based scholar Mike Hobday (Hobday (2005), which in turn draws on an influential earlier review that uses the notion of five generations of innovation processes developed by Rothwell (1994). As acknowledged by Hobday (2005) these schema do not necessarily apply well to firms in developing countries. Therefore in extending the theoretical treatment, the paper will consider the classifications proposed by Figueiredo (2010) whose comprehensive treatment argues that there is an emergent “learning school” that focuses on the dynamics of innovation and innovation management in the developing world. The focus of this scholarship has been to understand the nature of the capability building process in firms that start off with low levels or even the absence of innovation capabilities. These firms typically are initially imitative and are frequently dislocated from markets and sources of technology. For developing country firms, the process of innovation management often involves the firms first becoming familiar with various ways of acquiring knowledge even before they are able to apply this knowledge for production and then to innovation. Developing country firms are also embedded in “increasingly pervasive international networks of potential sources of technology”.

Building on this theoretical framework, the paper will make a link to policy implications and will argue that policy that is responsive to innovation performers requires a shift in mindset, the unit of analysis and the work programmes that constitute innovation policy. This writer believes that these changes are highly recommended in order to improve the effectiveness and meaningfulness of innovation. The firm-centred approach to designing and implementing innovation policy is highly recommended but is not an easy option, because it will require state actors to admit and acknowledge that they are not in full control of the outcomes of the process. In this approach the state is required to adopt a posture of

facilitation of an emergent process rather than controlling a rational and predetermined process and this takes confidence and organisation. It also requires the actors involved to work together with mutual trust and in partnership. These reflections confirm that putting firms at the centre of innovation policy and theorising remains intractable. However, there is some progress, as countries appear to be accepting the need for greater segmentation and tailoring of effort in order to better align goals, tasks and measure OECD (2011).

There is evidence that public bodies are learning how to interact effectively with the private sector and this remains an important opportunity for learning and policy experimentation. The evidence of this trend are reviewed in countless examples from Europe (see Arnold, E and Thuriaux, 1997), a number of OECD innovation reviews and some studies from developing countries (Khan 2008, Chaminade and Vang 2009, Intarakumnerd, 2002 and Intarakumnerd et al., 2011). Recent research carried out by the author in South Africa suggests that there is much work to be done to engage the private sector and to place this as a focus (Marcelle 2011). That work is not particularly optimistic about the general usefulness of the innovation policy machinery.

This writer argues that policies that do not include firm-level perspectives are suboptimal. Innovation policy approaches that are not responsive to and focused on innovation performers, both at national and regional levels, are usually blunt instruments which do not acknowledge or respond to variation in innovation positions, paths and processes. These undifferentiated policies result in persistent challenge of funding innovation, even in areas that are earmarked for strategic focus such as the biotechnology industry. Making a reorientations in the scope and design of innovation programmes will not only foster improved partnerships between market and the state but will contribute to the political problem of demonstrating the relevance of science, technology and innovation spending. As it stands, private sector firms under invest in R&D in important areas and universities and other public research bodies give them insufficient priority. The state can play a major signalling role and stimulating investment including through procurement and leveraging of public funds.

#### 100 word summary

This paper presents an argument and evidence regarding the extent to which science, technology and innovation policies, particularly in developing countries, often ignore the perspectives of innovation performers. Building on theoretical frameworks that draw on strategic management of innovation and learning school perspectives, the paper will make a link to policy implications and will argue that policy that is responsive to innovation performers requires a shift in mindset, the unit of analysis and the work programmes that constitute innovation policy. This writer believes that these changes are highly recommended in order to improve the effectiveness and meaningfulness of innovation.